



# Elicitation of preferences of Dutch broiler and pig farmers to support decision making on animal welfare



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## ABSTRACT

Conjoint analysis was conducted to elicit Dutch broiler and fattening pig farmers' preferences about different characteristics of production systems, with primary interest in farmers' intrinsic motivation towards animal welfare (AW). A cluster analysis was carried out to identify distinct groups of farmers with homogeneous preferences. The results showed that farmers preferred conventional practices and had negative preferences towards free-range systems. Two clusters of broiler farmers were distinguished. The 'Free-range opposed' cluster evaluated a production system by focusing on a single aspect, the provision of free-range access, while the 'Multi-attribute focused' cluster included multiple attributes in their evaluation. In the case of fattening pig farmers, no clusters could be identified. Results showed that farmers do not have a strong intrinsic motivation to switch to a system with higher animal welfare standards. It is therefore likely that the level of on-farm AW will be determined by external and farm-specific factors, and that higher levels of AW will only be achieved if these factors are favorable for the adoption of these production systems.

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## 1. Introduction

Given the current international economic and political environment, increasing public concerns about farm animal welfare (AW) are mostly addressed through market-based initiatives that achieve AW standards above the minimum legal requirements, rather than implementing stricter legislative standards in Europe [1]. In the Netherlands, a middle-market segment has emerged that is positioned between conventional and organic products in terms of AW, and which supplies meat products that comply with AW standards above the minimum legal requirements [2]. These market initiatives were generally developed to balance the different interests of stakeholders, citizens, and consumers [3]. Hence, these initiatives are not always aligned with farmers' interests and preferences, even though their success depends on the participation of farmers. Therefore, knowledge about the preferences of farmers and the factors that determine participation in market initiatives is essential if new market initiatives are to be successful in achieving higher levels of on-farm AW.

The decision to adopt a new production system with higher levels of AW is affected by farmers' intrinsic motivation, and external and farm-specific factors and constraints [4–7]. Intrinsic motivation concerns an individual's internal reasons for undertaking a particular action and appeals to a farmer's moral obligation. A range of studies suggest that intrinsic motivation is not only an important determinant of adoption decisions but it often outweighs financial motives in the decision. For example, Greiner and Gregg [8] concludes that farmers are more strongly motivated by stewardship aspirations than by economic and social goals when they decide about adoption of conservation practices. Similarly, a study on the behavior of Dutch dairy farmers suggests that non-economic goals, such as enjoying work, working with animals and producing a good and safe product are ranked higher than economic goals of maximum income [9]. Hence, drawing on the findings of recent literature on the importance of intrinsic motivation in farmers' decision making, this paper focuses on farmers' intrinsic motivation to improve AW.

Studies exploring farmers' intrinsic motivation to improve AW have tended to investigate farmers' attitudes about AW using qualitative interviews. Studies focusing on pig producers showed that AW was conceived mainly as biological health and functioning, and that producers preferred to keep pigs in a well-controlled environment that was properly managed [10–12]. A recent study explored

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the attitude of Dutch pig farmers towards specific practices to reduce tail docking, as one of the important AW issues [13]. Results of the study suggest that farmers perceive stopping with the routine practice of tail docking as a very important risk factor for tail biting among pigs. Other studies explored farmers' motivation by identifying the cognitive determinants of farmers' decision-making using social-psychology theories, such as the Theory of Planned Behavior [14,15]. Although the current literature provides a general view on farmers' perception of AW, these studies were mainly descriptive and did not provide quantitative information on the trade-offs between particular system characteristics. In addition, these studies did not address the context of the production systems and market initiatives in the Netherlands. Market initiatives and related production systems differ in the range of production system characteristics, and farmers' preferences about these different characteristics are likely to be different too. Hence, information on such trade-offs and farmers' driving preferences, particularly related to currently available production systems, can be useful in designing new market initiatives [7,16].

Broiler and fattening pig production are the two most important meat production sectors in the Netherlands in terms of quantity, with a production of 867,000 tons and 1,311,000 tons in 2013, respectively [17,18]. Public concerns about AW are particularly strong in these sectors and several market initiatives with higher AW standards have been developed in the past decade. The aim of this study was to elicit Dutch broiler and fattening pig farmers' preferences about AW-related characteristics of production systems.

## 2. Materials and methods

### 2.1. Questionnaire

The survey for broiler and fattening pig farmers was administered using a paper and pencil questionnaire in a study group setting, and carried out in Dutch. Prior to the actual data collection, the questionnaire for broiler farmers was pre-tested, face-to-face, with a broiler farmer to check whether the questionnaire was understandable for the target group. The questionnaire for broiler farmers was revised based on his comments, and general comments about the structure of the questionnaire were also taken into account in revising the questionnaire for pig farmers. The resulting questionnaires for both sectors consisted of two distinct parts. The first part contained questions regarding the respondents' demographic and socio-economic characteristics. The second part contained a conjoint task to elicit farmer's preferences about production systems.

### 2.2. Sample

#### 2.2.1. Data collection

Data were collected from October to December 2013 in the province of Noord-Brabant, which is the main area for broiler and pig production in the Netherlands. Broiler farmers and fattening pig farmers who participated in study groups were asked to participate in the survey. In total, 22 broiler farmers and 15 fattening pig farmers participated in the survey. The respondents represented approximately 12% of the broiler farmers and 1% of the fattening pig farmers in Noord-Brabant. After checking the quality of responses and evaluating the models fitted to the data collected, 15 questionnaires of broiler farmers and 14 questionnaires of pig farmers were deemed appropriate for further analysis.

A farmer organization operating in the Southern part of the Netherlands (ZLTO) assisted in approaching potential participants for the study, all of whom were members of farmer-initiated study

groups. In the area of Noord-Brabant there are seven farmer-initiated study groups of broiler farmers and 30 study groups for pig farmers (however in the study groups for pig farmers not only fattening farmers are involved, but sow farmers and farmers with mixed farms). The majority of the members in the participating study groups were farmers with a conventional production system. Conventional farmers were the main target group of the study as they represent the potential group of adopters of alternative production systems. Three of the seven study groups of broiler farmers, and three of the 30 study groups of fattening pig farmers participated in the survey. The low response rate suggests that farmers were reluctant to provide information for this study. Farmers communicated that they were afraid that the information would be used to put pressure on farmers and that the results would be used against [19].

During the study group meetings, participants were presented with a technical explanation about the questionnaire, with an introduction to the survey and explanation of the tasks included. Members of two of the three participating broiler study groups filled in the questionnaire individually at her/his own speed during the meeting (i.e., 15 questionnaires were completed at the meeting). However, in the case of the third broiler study group and all the fattening pig study groups, filling in the questionnaire during the meeting was not feasible due to time constraints. Hence, participants were given the technical explanation and they were asked to fill the questionnaire in at home and to return the completed questionnaire within one week's time (i.e., 7 questionnaires from broiler farmers and 15 questionnaires from pig farmers were returned). The fact that farmers could complete the questionnaire at home can also explain the low response rate.

#### 2.2.2. Demographic and socio-economic characteristics

Table 1 shows the demographic and socio-economic characteristics of the sample. Respondents for the survey of broiler production systems varied in age between 30 and 67 years ( $M = 46.4^1$ ,  $SD = 8.5$ ).<sup>2</sup> Ninety-six percent of the respondents were male. The majority of respondents (69%) had worked for more than ten years as a self-employed farmer. Farming was the major source of family income for 86% of the respondents. Ninety-six percent of the respondents operated a conventional farm system, 76% of which had more than 90,000 animal places in the farm. The majority of the farmers (75%) had invested in farm expansions in the last ten years. Twenty-three percent of respondents produced for the domestic market only, 13% produced for the international market only, and 64% produced for both domestic and international markets.

Regarding the survey of fattening pig production systems, all 15 respondents were male with an age ranging from 31 to 61 years ( $M = 46.4$ ,  $SD = 8.6$ ). Respondents had many years of experience in farming as self-employed farmers ( $M = 23.7$ ,  $SD = 11.1$ ). Farming was the main source of income for the majority of respondents. All respondents had conventional production systems, although small differences (e.g. providing natural enrichment material) compared to the conventional system defined in this study were indicated by some of the respondents. The sample mostly included medium-sized (1,001–2,000 animal places) and large-sized farms (more than 2,000 animal places). The majority of respondents had expanded their farms in the last ten years. About 70% of the respondents produced for the domestic market only, while 30% of the respondents indicated that they produced for both domestic and international market.

<sup>1</sup> M = mean

<sup>2</sup> SD = standard deviation

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